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NPIC/R-5158/64

December 1964

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18 Pages

PHOTOGRAPHIC INTERPRETATION REPORT

HEN HOUSE ANTENNA RADAR SITE 1 ANTIMISSILE TEST CENTER SARY-SHAGAN, USSR



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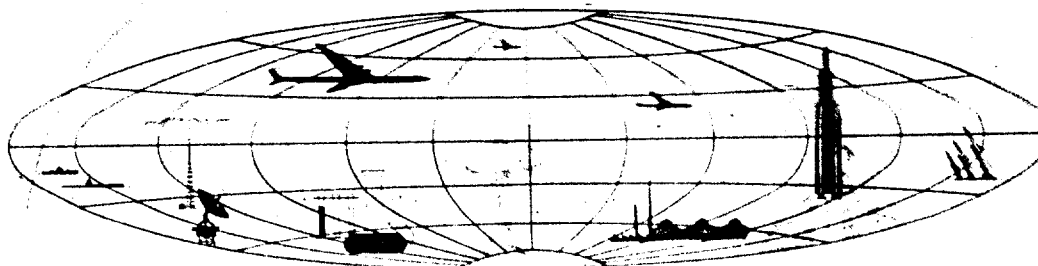
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PHOTOGRAPHIC INTERPRETATION REPORT

HEN HOUSE ANTENNA
RADAR SITE 1
ANTIMISSILE TEST CENTER
SARY-SHAGAN, USSR

NPIC/R-5158/64
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Map of the Sary-Shagan area in Kazakhstan, showing various facilities and launch points. The map includes a legend, a scale bar, and an inset map of the Sary-Shagan area.

Legend:

- Launch complex
- Instrumentation site
- Communication site
- Airfield
- ▬ Dirt strip
- ▬ Road
- - - Trail
- ▬ Railroad

Scale: 20 0 20 40 NAUTICAL MILES

Key Locations and Features:

- Baykonur
- Dzhezkazgan
- POSSIBLE 15
- UNIDENTIFIED FACILITY
- POSSIBLE 14
- BAYKONUR AREA FIELD LAUNCH POINT
- POSSIBLE FIELD LAUNCH POINT
- UNIDENTIFIED FACILITY
- POSSIBLE MOBILE IMPACT AREA
- POSSIBLE 8, 9, 10, 11, 12
- POSSIBLE 5, 6, 7
- POSSIBLE 3, 4
- POSSIBLE 1
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Inset Map:

- SUPPORT BASE
- TARANAL
- SARY-SHAGAN
- MAIN HOUSING COMPLEX
- HEN HOUSE ANTENNA (SEE FIGURE 2)
- HEN ROOST ANTENNAS
- SAN TRAINING CENTER

FIGURE 1: ANTIMISSILE TEST CENTER, SARY-SHAGAN, USSR.

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INTRODUCTION

This report is in response to NSA requirement P0432/R55-64 and CIA requirement C-RR4-81,565 requesting a detailed report on the HEN HOUSE antenna and associated facilities at Radar Site 1 (45-59N 73-39E) at Sary-Shagan Antimissile Test Center (Figures 1 and 2), with information on construction chronology since [REDACTED]. Since TALENT photography of [REDACTED] small-scale KEYHOLE missions of fair to very good photography, mostly stereoscopic, have covered the site,

although interpretation is limited by the small scale. The original TALENT photography of [REDACTED] is the only large-scale photography available. The original mensural data on the HEN HOUSE antenna furnished in PIC/JR-1010/61, [REDACTED] 1/4, have been carefully reviewed and the results, including certain significant changes, can be found in Figure 7. Vertical dimensions given in this report can be considered accurate to plus/minus 10 feet, horizontal dimensions to plus/minus 5 feet.

SUPPORT AREA

The support area for Radar Site 1 in [REDACTED] consisted of approximately 20 buildings, some temporary and some permanent, including a batch plant and a steam plant. By [REDACTED] most of the temporary buildings, the batch plant, and crates observed at the site in [REDACTED] had been removed. The majority of the permanent support buildings had been constructed by this time. Two additional major support buildings appeared between [REDACTED] and one from [REDACTED]

[REDACTED] One major building was removed between [REDACTED] and [REDACTED]. Approximately 27 permanent-type buildings of various sizes and configurations now are contained in the support area. The tabulation in annotations for Figure 3 (Table 1) provides pertinent details on support facilities. [REDACTED] KEYHOLE photography of Radar Site 1 is shown in Figure 4. The construction chronology of support facilities and utility lines is shown in Figure 5.

UTILITIES

The following utility lines were present at Radar Site 1 in [REDACTED] a water intake line and an effluent line extending directly from the site to Lake Balkhash, a possible water line extending from the site to the Water Treatment Facility near the Main Housing Complex, a conduit extending from the site to the Probable Range Headquarters/Complex Control Area, and a powerline paralleling the access road and extending from the Main Power Substation

and continuing south to the HEN ROOST antennas. At the same time an open ditch was under excavation along the eastern site boundary. This ditch was extended further toward the north by [REDACTED] and was subsequently buried, terminating at a liquid disposal area. This disposal area increased in size as observed on subsequent missions. Between [REDACTED] a number of long new conduits were constructed to the site as depicted on

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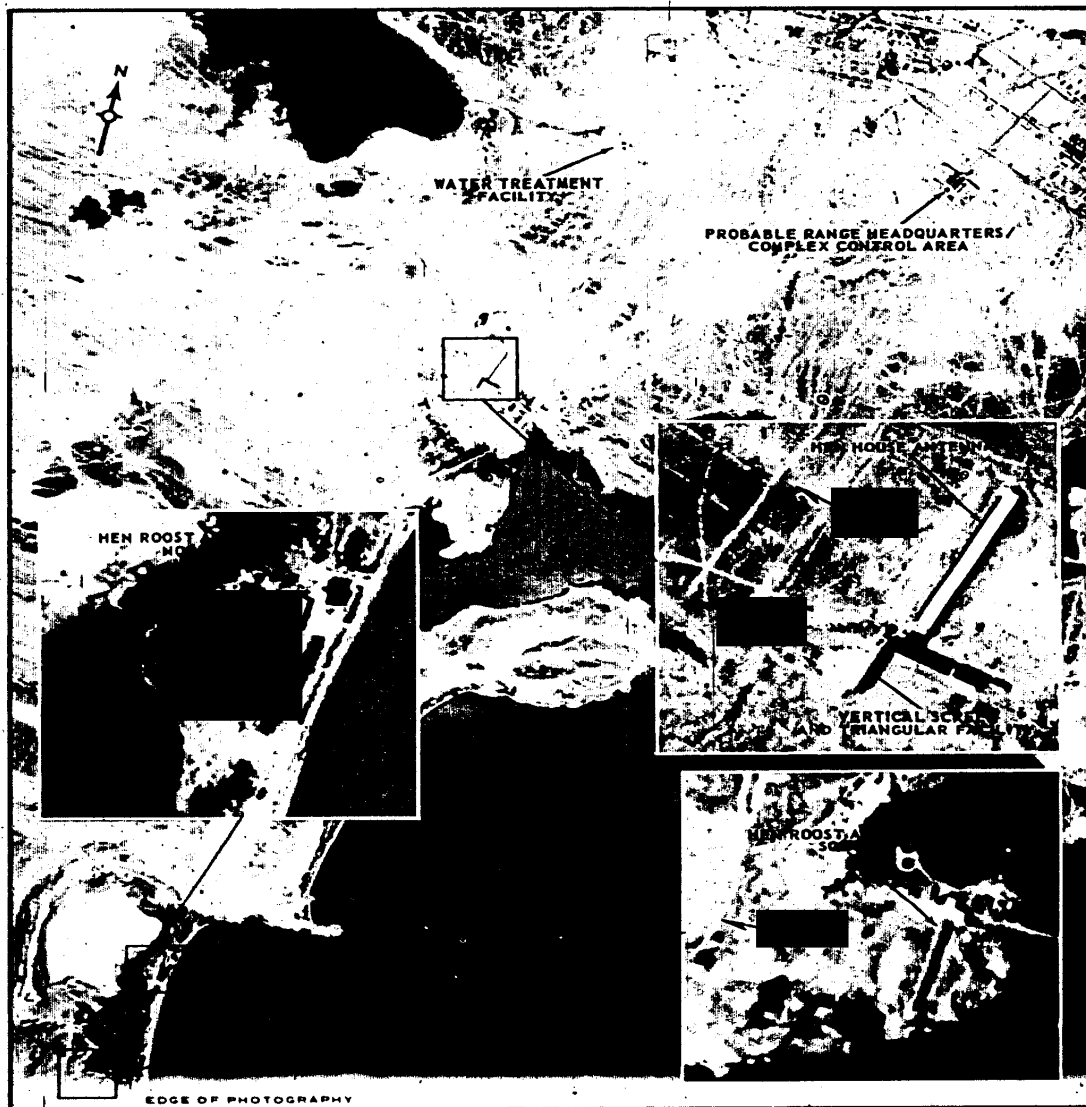
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25X1D



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FIGURE 2. HEN HOUSE AND HEN ROOST ANTENNAS, [REDACTED]

NPIC J-8510 (12/64)

25X1D

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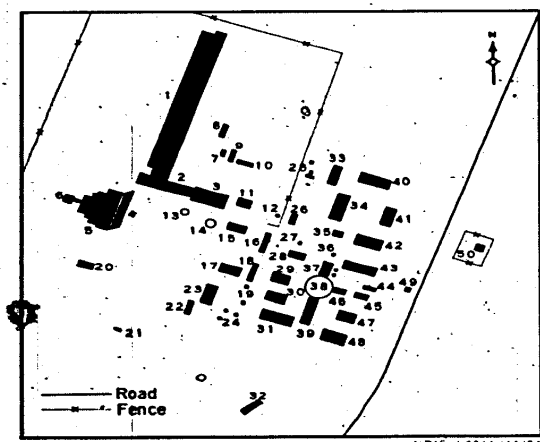


FIGURE 3. RADAR SITE 1.

TABLE 1. Key to Annotations on Figure 3

Item No	Description	Dimensions (ft. approx)	Remarks
1	Original HEN HOUSE structure	--	See Figures 6 and 7.
2	Original control bldg	--	See Figures 6 and 7.
3	Control bldg extension	--	See Figures 6 and 7.
4	Vertical screen	--	See Figures 6 and 8.
5	Triangular facility	--	See Figures 6 and 8.
6	Bldg at apex of triangular facility	--	See Figures 6 and 8.
7	Bldg	20 x 20	
8	Bldg	100 x 55	Present in [REDACTED]
9	Bldg	55 long	Present in [REDACTED]
10	Bldg	110 long	Present in [REDACTED]
11	Bldg	85 x 35 x 20 high	Flat roof. U/c in [REDACTED] probably completed by [REDACTED]
12	Probable bunker	--	Identifiable as a bunker on TALENT photography. Configuration details not discernible on current small-scale photography.
13	Probable buried tank	--	Circular excavation observed at site on TALENT photography. Served by buried conduit.
14	Possible buried tank	--	First observed as circular ground scar between [REDACTED] appeared earth covered by [REDACTED]
15	Bldg	85 x 65 x 15 high	Served by buried conduit. Probable gable roof. U/c in [REDACTED] appeared complete by [REDACTED]
16	Bldg	110 x 25	Gable roof. Present in [REDACTED] dismantled between [REDACTED]
17	Bldg	130 x 45 x 10 high	Gable roof.
18	Bldg	110 x 25 x 15 high	Gable roof.
19	2 bldgs	Each 20 x 20	
20	Bldg	55 x 35	

Figure 5. Numerous short ground scars and conduits have appeared from time to time in the support and operational areas, only some of which are shown on Figure 5 because of space limitations.

Fence realignment has taken place in the southwestern corner of the site to accommodate the recently constructed triangular facility and the vertical screen. Two fence segments observed in [REDACTED] just west of the antenna structure have been removed. The small-scale photography currently available could preclude distinguishing between fencelines and utility lines.

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TABLE 1 (Continued)

Item No	Description	Dimensions (ft, approx)	Remarks
21	Unidentified facility, possibly a bunker	75 x 40	Use between [REDACTED] Trail served.
22	Hardstand or very low shed-type bldg	110 x 65 x 20 high	Probable gable roof.
23	Bldg	35 x 25	Appeared between [REDACTED]
24	Several very small unidentified structures	110 x 45 x 15 high	One present in [REDACTED] two appeared between [REDACTED]
25	Three small unidentified structures	130 x 35	Gable roof.
26	Bldg	50 x 30 x 10 high	Identifiable on TALENT photography; details not apparent on current photography.
27	Possible buried tank	80 x 25 x 15 high	Gable roof.
28	Bldg	130 x 35	Gable roof.
29	Bldg	130 x 35	Gable roof.
30	Bldg	110 x 45 x 15 high	Present in [REDACTED]
31	Bldg	110 x 45 x 15 high	Hip roof.
32	Bldg	155 x 40 x 25 high	Gable roof.
33	Bldg	25 x 25	Identifiable on TALENT photography; details not discernible on current photography.
34	Possible buried tank	140 x 35 x 10 high	One tall stack in [REDACTED] two stacks visible in [REDACTED]
35	Steam plant	160 x 45	Gable roof. Constructed between [REDACTED] and [REDACTED]
36	Apron for coal supply	100 x 25 x 10 high	Flat roof.
37	Bldg	135 x 30 x 10 high	Flat roof.
38	Bldg	135 x 30 x 10 high	Gable roof.
39	Bldg	155 x 55 x 20 high	Hip roof.
40	Bldg	30 x 30	Hip roof.
41	Bldg	30 x 30	Hip roof.
42	Bldg	50 x 30	Hip roof.
43	Bldg	110 x 60 x 15 high	Hip roof.
44	Bldg	125 x 55 x 25 high	Hip roof.
45	Bldg	20 x 20	Possible mast identified on TALENT photography. Fenced.
46	Bldg	20 x 21	

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HEN HOUSE ANTENNA

25X1D The HEN HOUSE antenna structure (Figures 6 and 7), first observed in [REDACTED] does not appear to have changed significantly through [REDACTED] 25X1D [REDACTED] The structure measures 915 feet in length. Intensive review of the large-scale TALENT photography of [REDACTED] has 25X1D [REDACTED]

resulted in certain significant mensural changes, as depicted in Figure 7. The overall width of the antenna structure including the shed is [REDACTED] 25X1D [REDACTED] with the width from the rear wall to the [REDACTED] 25X1D [REDACTED] the width from the rear wall to the [REDACTED] 25X1D [REDACTED] the height of the struc-

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25X1D ture at the ridgeline is [REDACTED]. The length of
25X1D the roof slope on the face side of the antenna
25X1D from ridgeline to shed is 40 feet and it is [REDACTED]
25X1D degrees off the vertical; the shed roof length
25X1D is [REDACTED] and the vertical shed wall [REDACTED].
25X1D The rear roof slope is [REDACTED] long and it is [REDACTED]
25X1D off the vertical; the vertical rear
25X1D wall is [REDACTED] high. Roof slope angles can be
25X1D considered accurate to plus/minus 10 degrees.

25X1D Between [REDACTED]
25X1D numerous crates were removed from the vi-
25X1D cinity of the antenna structure, and an unidenti-
25X1D fied object casting a heavy shadow at the middle
25X1D of the antenna structure in [REDACTED] had
25X1D been removed.

25X1D The antenna face is housed in an area ap-
25X1D proximately [REDACTED] the
25X1D west side of the structure and consists of at
25X1D least 40 panels. The antenna face is [REDACTED]

off the vertical. The antenna face appeared
light-toned on [REDACTED] photography as well as
on subsequent available photography when the
face was discernible until [REDACTED]. At that
time approximately 190 feet along the northern
end of the antenna face appeared dark. One year
later, on [REDACTED] coverage, and on subsequent
missions the entire antenna face appeared black.
On [REDACTED] the most
recent coverage included in this report, the
antenna face was not discernible.

The orientation of the perpendicular bi-
sector of the antenna is computed at [REDACTED]

Development of the HENHOUSE antenna and
other components of the operations area is
depicted in Figures 9 through 11.

CONTROL BUILDING

25X1D The original control building (Figures 6 and
25X1D 7) observed in [REDACTED] measured approxi-
25X1D mately [REDACTED] high. It is positioned
25X1D at right angles to the south end of the antenna
25X1D structure and is connected to it by a building 85
25X1D feet long by 65 feet wide. By [REDACTED] an
25X1D extension was being added to the east end of the
25X1D control building. Construction continued in
25X1D [REDACTED] the extension
25X1D appeared complete externally except for possible

activity on the roof. This addition is higher and
wider than the original building, measures 100
by 75 and is 55 feet high.

The area to the west of the control building,
which was being bulldozed in [REDACTED] appears
to be a below-grade entrance on subsequent pho-
tography. Probable vehicles were parked there
as observed on photography taken during the
[REDACTED]

TRIANGULAR FACILITY AND VERTICAL SCREEN (Figures 6 and 8)

25X1D Earth scraping of an unidentified nature was
25X1D observed on [REDACTED] photography in the south-
25X1D west corner of Radar Site 1 just southwest of the
25X1D control building. By [REDACTED] a generally
25X1D triangular light-toned facility was under con-
25X1D struction at this site with a small low building

positioned to the west at the apex of the triangle.
Construction activity was in progress at the same
time east of the base of the triangular facility.
Realignment of the western and southern fence-
lines appeared to have taken place to accommo-
date the new construction activities.

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25X1D

FIGURE 4. RADAR SITE 1

NPIC J-0812 112/64

25X1D

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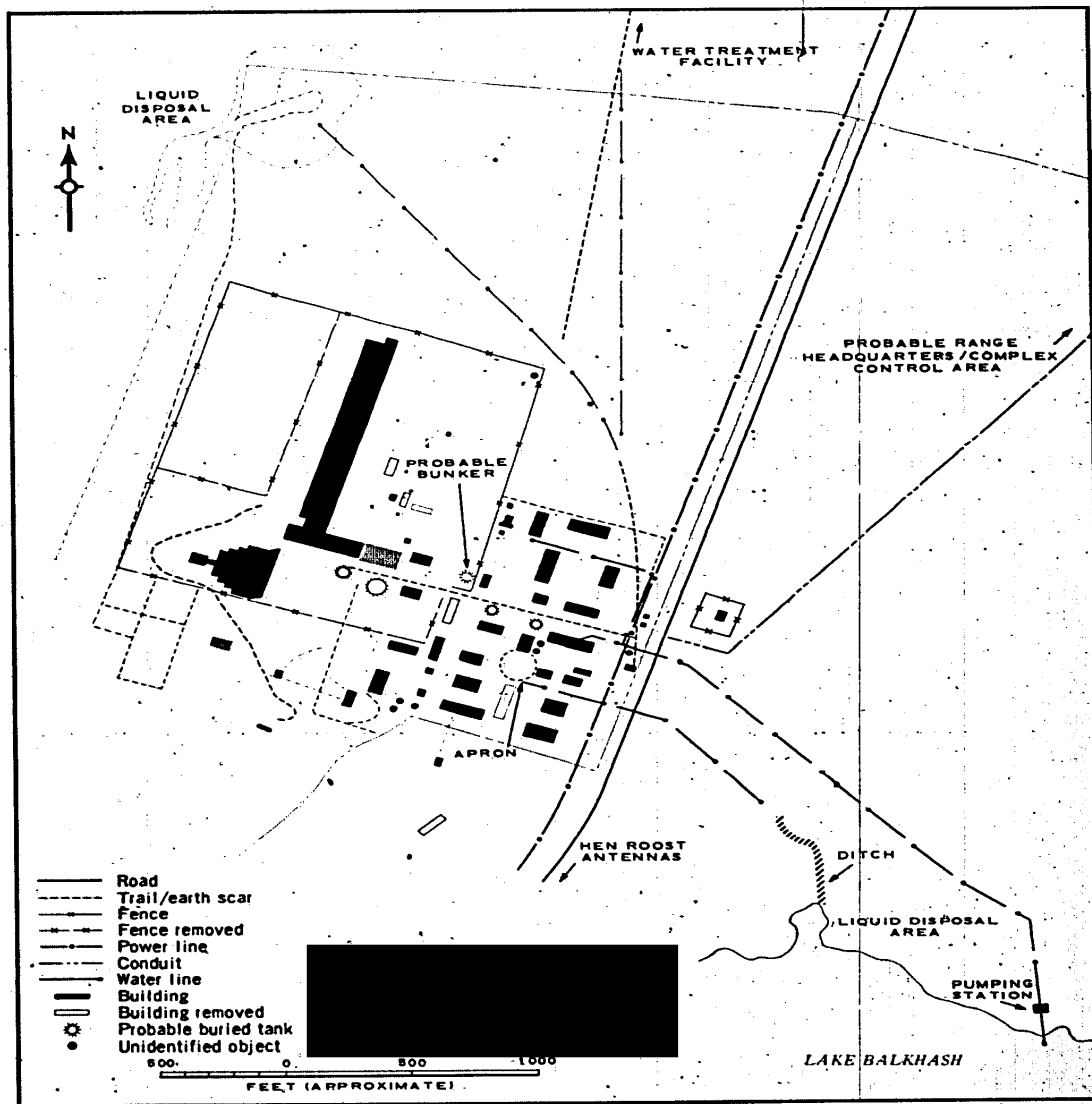


FIGURE 5. RADAR SITE 1

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25X1D Work continued on the triangular facility in [REDACTED] and a structure could be identified connecting this facility and the low building at its apex. Construction was observed during this time 125 feet east of the base of the triangular facility (east of the site of a vertical screen to be developed subsequently). Two linear areas were under development (including probable excavation), paralleling the base of the triangular facility. The western strip approximated 40 feet in width, the eastern strip 25 feet in width, with a separation interval of 80 feet.

25X1D By [REDACTED] activity was noted for the first time in the area adjacent to the base of the triangular facility. A structure under development, probably to provide the base for the vertical screen to be erected shortly, is light-toned, appears to be on ground level, and measures approximately 200 by 60 feet. It extends from the northern edge of the triangular facility and by [REDACTED] had reached a point 45 feet from the southern edge of the facility. The area of activity observed in [REDACTED] falls to the east of this structure and appears dark in tone on this coverage.

25X1D By [REDACTED] with snow conditions prevailing, construction appeared to have taken place since [REDACTED] along the entire length of the site of the future screen and just to the east of it.

25X1D The triangular facility, the low building at the apex with connecting structure, and the vertical screen appeared complete or nearly complete externally on small-scale photography of [REDACTED]. The low flat-roofed building at the apex of the triangular facility measures approximately 75 by 45 and is 15 feet high. The triangular facility is stepped or notched, approximately 245 feet wide at the base, 85 feet wide at the apex, with a depth of 195 feet. Five steps are contained in the facility, with depths

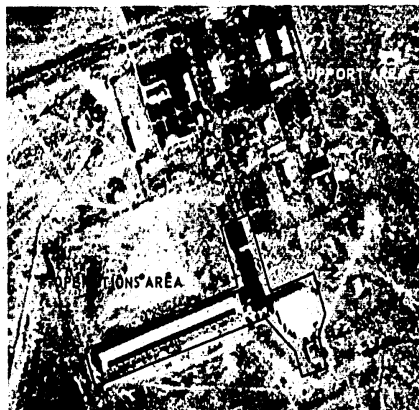
of approximately 80, 40, 20, 40 and 15 feet, respectively, from the base to the apex. The surface of the facility appears to be flat and of uniform height from the ground (approximately 10 feet). Although on almost every coverage the facility is highly reflective, appearing very light in tone, its composition cannot be ascertained from available photography. On [REDACTED]

[REDACTED] the surface appears gray. Whether this tone is attributable to sun angle could not be determined. The gray/light tone noted on [REDACTED] apparently was caused by a combination of snow and dust. Connecting the two facilities is a structure of undetermined width, approximately 30 feet long.

Along the base of the triangular facility and approximately [REDACTED] from the southwest corner of the control building a vertical screen approximately 110 feet high has been constructed. Configuration details and mensuration must be considered as approximate since interpretation has been based almost entirely on shadow analysis. The screen is estimated to be at least 245 feet wide (possibly somewhat wider) and appears to abut the triangular facility at its base, with no apparent curvature. The vertical screen and the triangular facility appear to line up with each other at the southern extremity. Dense shadows and indistinct imagery preclude detailed interpretation of the northern extremity of the screen. However, the screen or an appendage to it may possibly extend a short distance beyond the northern terminal point of the triangular facility, as portrayed on Figure 8. Several small unidentified structures, too indistinct for graphic portrayal, are positioned close to and aligned with the northern and southern extremities of the screen. It is an estimated 35 feet at the base and [REDACTED] at the top. The vertical screen and triangular facility both parallel the original antenna structure, having as

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FIGURE 6. CONCEPT OF OPERATIONS AREA AT RADAR SITE 1, [REDACTED]

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FIGURE 7. SCHEMATIC DRAWING OF THE HEN HOUSE ANTENNA AND CONTROL BUILDING AT RADAR SITE 1

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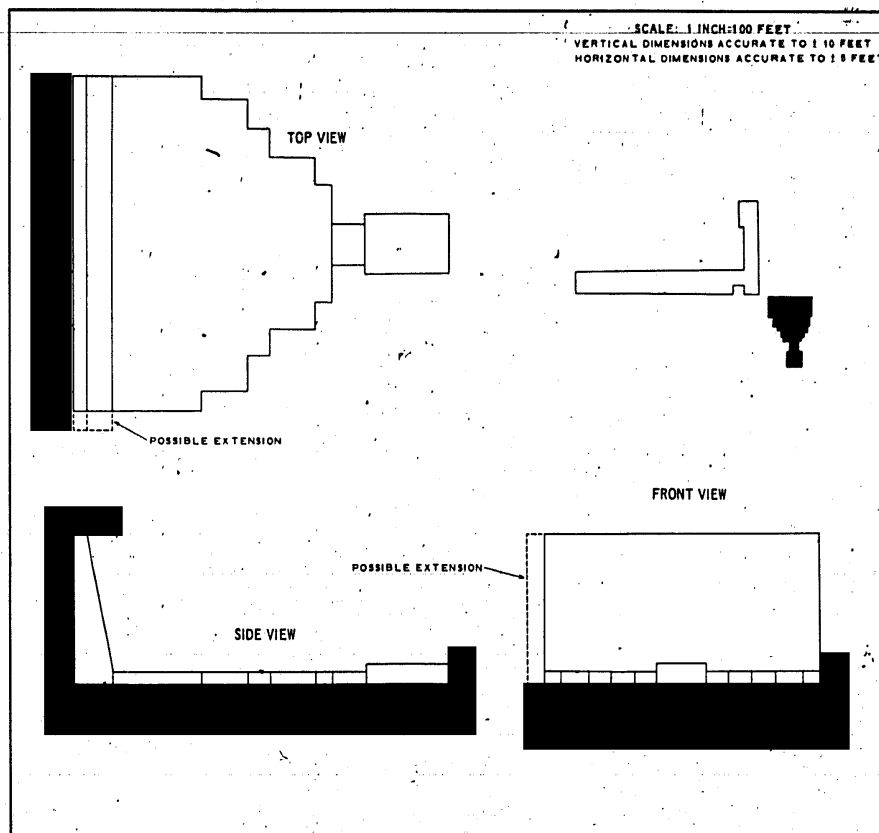
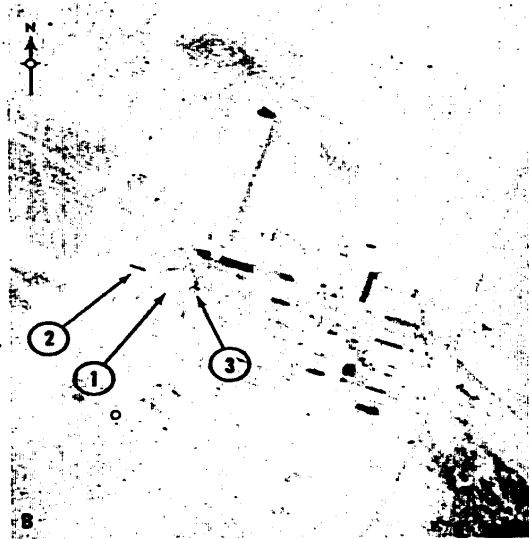


FIGURE 8. SCHEMATIC DRAWING OF THE TRIANGULAR FACILITY AND THE VERTICAL SCREEN AT RADAR SITE 1.

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25X1D A. In [REDACTED] Radar Site 1 consisted of an antenna structure (1) with light-toned panels in the antenna face and a control building (2). Note initial earth scraping (3) to the southwest of the control building.

25X1D B. By [REDACTED] a stepped light-toned triangular facility (1) with a low building (2) at its apex is under development. Construction activity (3) is noted to the east of the triangular facility.

25X1D C. Work continues on the triangular facility (1) and in the area (2) to the east of it in [REDACTED]



FIGURE 9. DEVELOPMENT OF THE OPERATIONS AREA OF RADAR SITE 1 FROM [REDACTED] 12/64

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25X1D A. On [REDACTED] photography work is noted on the probable base (1) for a vertical screen to be erected and on an extension (2) to the control building.

25X1D B. The vertical screen (1) at the base of the triangular facility (2) and the extension (3) to the control building appear complete or nearly complete externally on small-scale photography of [REDACTED]

25X1D C. A segment (1) of the HEN HOUSE antenna face approximately 1,900 feet long appears dark in tone on photography of [REDACTED]
25X1D [REDACTED]



FIGURE 10. DEVELOPMENT OF THE OPERATIONS AREA OF RADAR SITE 1 FROM [REDACTED]

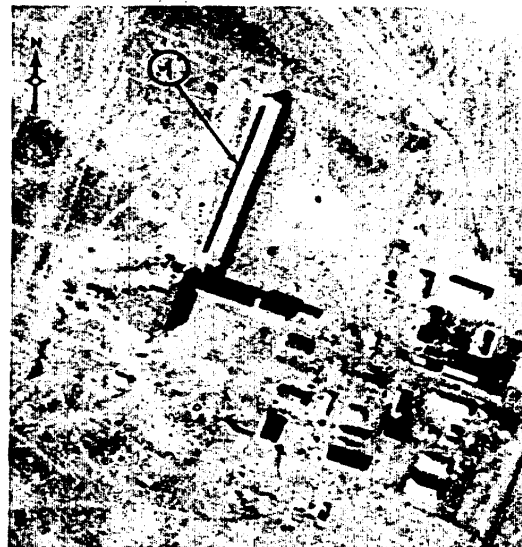
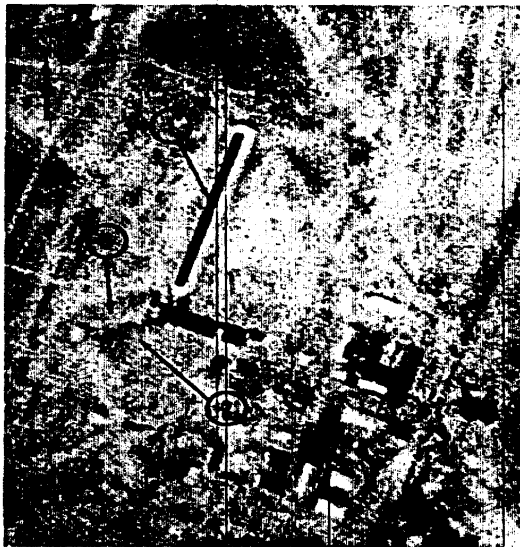
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25X1D. A. On photography of [REDACTED] the entire antenna face (1) appears black. The vertical screen (2) and triangular facility (3) are barely visible.

B. The antenna face (1) remains black on the latest available coverage of [REDACTED]

25X1D
25X1D

FIGURE 11. DEVELOPMENT OF THE OPERATIONS AREA OF RADAR SITE 1 FROM [REDACTED]

NPIC J-8718 (12/64)

25X1D

25X1D

25X1D well a perpendicular bisector of [REDACTED]
25X1D (referenced to true north and [REDACTED])
25X1D [REDACTED] The area immediately to the east of the screen is usually in shadow, thus precluding determination of recent activity there. Levelling and grading comprise the only activity observed in visible portions to the east. A small number of light-toned objects, 15 to 20 feet square and approximately 10 feet high, are positioned on either side of the triangular facility. These objects decrease in number and were possibly used in the construction of the facilities.

25X1D From [REDACTED] no significant external changes could be discerned at

these facilities on small-scale photography. Several very small unidentified objects appeared on the roof of the building at the apex of the triangular facility. Probable construction materials observed on both sides of the facility in [REDACTED] were being removed by [REDACTED] and the adjacent areas were being levelled and cleared. [REDACTED] a trail extended from a point close to the control building, proceeded around the triangular facility to the southeast to a small area of unidentified construction activity, possibly a bunker. Construction continued through [REDACTED]

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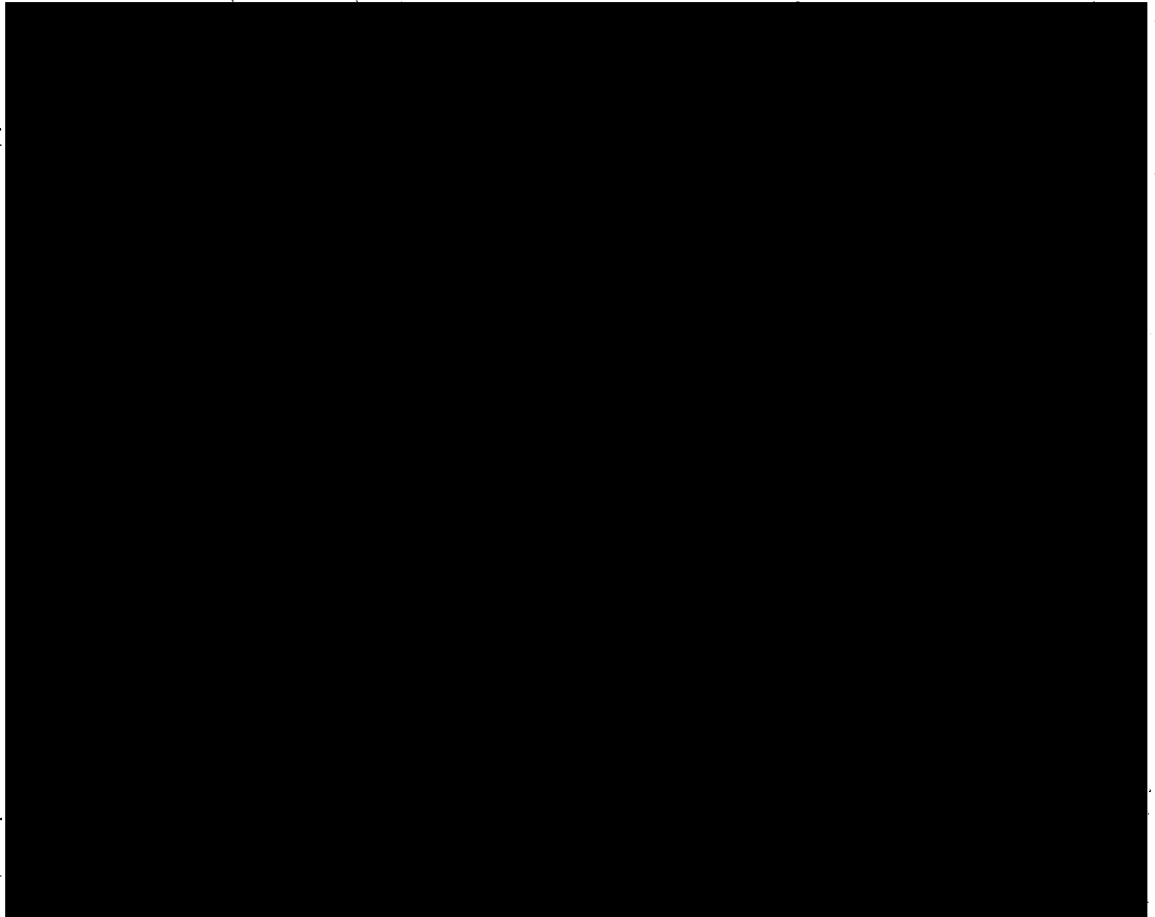
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REFERENCES

PHOTOGRAPHY



25X1D

MAPS OR CHARTS

ACIC, USAF Operational Navigation Chart, Sheet ONC-F-6, 1st classified edition, 30 Aug 61, scale 1:1,000,000 (CONFIDENTIAL)

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Control System Only

TCS-11048/64
NPIC/R-5158/64

REFERENCES (Continued)

DOCUMENT

25X1C 1. CIA: PIC/JR-1010 '61, *Antimissile Complex, Sary Shagan, USSR*, Apr 61 (SECRET/No Foreign Dissem [REDACTED])
25X1C [REDACTED]

REQUIREMENTS

NSA. P0432/R55-64

CIA. C-RR4-51,565

NPIC PROJECT

11471.64

TOP SECRET CHESS RUFF

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